



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**

**REGION IX**

**75 Hawthorne Street**

**San Francisco, CA 94105-3901**

November 9, 2007

Kenneth Miller  
Bureau of Land Management  
Elko Field Office  
3900 East Idaho Street  
Elko, NV 89801-0611

Subject: Leeville Project Cumulative Effects Draft Supplemental Environmental Impact Statement (SEIS) [CEQ #20070369]

Dear Mr. Miller:

The U.S. Environmental Protection Agency (EPA) has reviewed the above referenced document. Our review and comments are provided pursuant to the National Environmental Policy Act (NEPA), the Council on Environmental Quality's (CEQ) NEPA Implementation Regulations at 40 CFR 1500-1508, and our NEPA review authority under Section 309 of the Clean Air Act.

The Bureau of Land Management (BLM) published the Leeville Project Cumulative Effects Draft Supplemental Environmental Impact Statement (SEIS) in response to a decision by the U.S. Court of Appeals for the Ninth Circuit: Great Basin Mine Watch v. Hankins, 456 F.3d 955, 9<sup>th</sup> Circuit 2006. The Court required BLM to prepare a Supplemental EIS to adequately address the cumulative impacts for the Leeville project, which was analyzed in a Draft EIS in 2000 and a Final EIS in 2002. BLM signed the Record of Decision for the project in 2002. The project has been operating throughout the law suit.

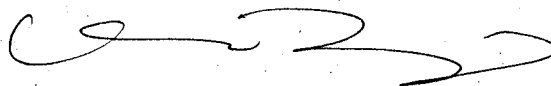
In our comments on the Leeville Final EIS, we expressed concerns regarding the project's potential impacts to water quality based on uncertainties related to the mine's geochemistry. We recommended that commitments to additional mitigation and monitoring be made in the Record of Decision (ROD), including establishment of a long-term post-closure trust fund at the start of the project, if it was anticipated to be necessary.

We have rated the Leeville Project Draft SEIS as EC-2 (see enclosed "Summary of Rating Definitions and Follow-Up Action"). Our rating on this document is based on our continuing environmental concerns about the Leeville project because of its potential significant adverse impacts to water quality. We do not believe the project includes sufficient measures to ensure against acid rock drainage. Neither the original

EIS nor the Draft SEIS contains sufficient information to confirm that the acid neutralization potential of the Leeville waste rock is adequate to prevent acid generation and ensure against adverse impacts to water quality over the long term. We recommend that the Final SEIS provide additional information regarding mine geochemistry, measures to prevent acid drainage, mercury emissions and controls, and bonding and long-term financial assurance. Our detailed comments are enclosed. Our recommendations are consistent with our previous comments on the Final EIS. While we understand that this project has been ongoing for several years, this SEIS provides an opportunity for reevaluation of, and adjustments to, some project components to ensure protection of environmental resources, both during mine operation and after mine closure.

We appreciate the opportunity to review this Draft SEIS and look forward to working with BLM to identify solutions to the concerns we have raised. We request a copy of the Final SEIS when it is filed with our Washington, D.C. office. If you have any questions, please call me at (415) 972-3846, or have your staff call Jeanne Geselbracht at (415) 972-3853.

Sincerely,



Nova Blazej, Manager  
Environmental Review Office

002912  
Enclosure

Cc: David Gaskin, Nevada Division of Environmental Protection  
Paul Pettit, Newmont Mining Corporation  
Damien Higgins, U.S. Fish and Wildlife Service

Leeville Project Draft Supplemental Environmental Impact Statement

Mine Geochemistry and Waste Rock Management

EPA continues to have concerns that the acid-base accounting upon which the Leeville project Plan of Operation (POO) is based may underestimate the amount of potentially acid generating (PAG) waste rock at the mine. The estimated percentage of PAG waste rock for the Leeville mine in Table 3-1 of the Draft Supplemental Environmental Impact Statement (SEIS) is also inconsistent with the Final EIS (p. 3-6). As we stated in our previous comments on the Draft and Final EISs, we believe Newmont's procedure for compositing all the rock for each rock type or formation under-represents the total amount of PAG waste rock from different areas within given rock types or geologic formations. One-third of the waste rock samples which were composited and for which acid-base accounting was conducted indicated an acid neutralizing potential to acid generating potential (ANP:AGP) ratio of less than 3:1 and low net neutralizing potentials. In addition, it is our understanding that the PAG waste rock estimates are based on Newmont's Net Carbonate Value (NCV) testing, which does not account for some uncertainties and may also lead to an underestimation of the potential for acid generation. It does not appear, however, that any kinetic tests were conducted to better characterize the waste rock.

We are also concerned because the Draft SEIS (p. 3-3) states that waste rock generated at the mine is classified in accordance with Nevada Division of Environmental Protection (NDEP) Waste Rock and Overburden Evaluation Guidelines (1996). NDEP classifies PAG waste rock with an ANP:AGP ratio of 1.2:1 or higher as non-PAG rock. This reference is inconsistent with BLM Nevada's Instruction Memorandum No. NV-97-017, which defines samples with an ANP:AGP ratio between 1.0 and 3.0, or a net neutralizing potential between -20 and +20 tons  $\text{CaCO}_3$  per kiloton rock material, as having an uncertain acid generation potential, and recommends kinetic tests be conducted on samples within this range to better determine potential to generate acid. If only waste rock with an ANP:AGP ratio equal to or less than 1.2:1 is classified and disposed as PAG rock without confirmation by kinetic testing, it is possible that some waste rock is being misclassified and improperly disposed.

**Recommendation:** We recommend that BLM reevaluate the geochemistry for this mine, including procedures for ensuring representativeness in determining ANP:AGP ratios and the amounts of PAG and neutralizing waste rock at the Leeville site. The Final SEIS should provide a description of this evaluation, supporting it with detailed geochemistry information. We recommend BLM require kinetic testing for waste rock with ANP:AGP ratios between 1:1 and 3:1 to better characterize this portion of the waste rock and help determine how it should be properly disposed. If kinetic testing is not conducted, we recommend waste rock with AGP:ANP ratios less than 3:1 be classified as PAG for purposes of proper disposal.

Accurate characterization of the waste rock is important in determining the amount and timing of available neutralizing waste rock to sufficiently encapsulate and buffer the PAG rock. One purpose of a waste rock handling plan is to specify how the distinctions within and between the different rock types will be made during operations and how each rock type will be disposed accordingly. In the case of the Leeville mine, the timing of the production of different waste rock types offers little flexibility, and stockpiling or using borrow material may be necessary to assure appropriate disposal of PAG rock with sufficiently neutralizing material.

**Recommendation:** The site specific waste rock handling plan should identify all areas of PAG waste rock based on the appropriate geochemical analysis, and identify the source of neutralizing material for each phase when PAG waste rock is disposed. The Final SEIS should describe this site specific waste rock handling plan, and it should be included in the Record of Decision (ROD).

EPA is concerned that Newmont's *Refractory Ore Stockpile and Waste Rock Dump Design, Construction and Monitoring Plan* (2003) does not include sufficient measures to ensure that waste rock piles are adequately designed to prevent acid mine drainage where there is a considerable amount of PAG waste rock. In addition, it remains unclear whether sufficient neutralizing waste rock is available at the Leeville mine to prevent acid generation or whether borrow material may be needed to adequately neutralize PAG waste rock at the mine. We have serious concerns about the existing plan for waste rock management at this mine for the following reasons:

- The plan specifies that sulfide waste rock dumps are placed on a 12-inch layer of waste rock, existing subsoil, or borrowed subsoil with a permeability of  $1 \times 10^{-5}$  cm/sec or less. EPA's analysis has determined that such a layer would not necessarily preclude leachate movement through it.
- The plan specifies that PAG material within the waste rock dump is encapsulated with a 10-foot layer of waste rock with an ANP:AGP ratio of at least 3:1, especially in situations where the first-loaded material is PAG. A thick neutralizing base layer is a positive component of the management plan. However, the plan does not account for the actual amount of neutralizing waste rock needed for each PAG cell based on stoichiometry. For example, a ten-foot layer of neutralizing rock may not be sufficient for lifts of PAG waste rock many times thicker.
- The plan does not specify that sulfide waste rock would be encapsulated on all sides with sufficiently neutralizing waste rock. PAG rock could be laterally surrounded with "non-reactive material," which would not necessarily provide any neutralizing potential. The appropriate volume and neutralizing capacity of encapsulating rock needs to be calculated for each lift of PAG rock based on stoichiometry of the material.

**Recommendation:** The Final SEIS and ROD should describe how sufficient neutralizing material will be assured and all waste rock will be properly disposed during all phases of the project to prevent acid rock drainage. If the volume and neutralization potential of waste rock will not be sufficient based on stoichiometry, we recommend appropriate borrow material be used. The Final SEIS and ROD should identify borrow sources that would be used if deemed necessary.

**Recommendation:** We recommend an implementation monitoring plan be developed and followed to ensure proper placement of waste rock.

The Final EIS and Draft SEIS do not specifically discuss the potential impacts of contamination of groundwater from the waste rock dump should the facility fail to contain and control all waste rock drainage (acidic and neutral), both beneath and downgradient of the facility. They also do not provide information on how contaminated groundwater or surface water would be mitigated should it occur.

**Recommendation:** The Final SEIS should discuss the potential impacts to surface water and groundwater resources should the waste rock dumps generate uncontrolled drainage either in the short- or long-term, and describe contingency measures to control these releases.

#### Financial Assurance

In light of the uncertain but potentially significant amount of PAG waste rock at this mine, EPA has serious concerns that bonding for this project may be significantly underestimated because additional borrow material may be necessary. Adequate bonding is critical to ensure funds will be available to properly close the site and reduce the potential for future taxpayer liability.

**Recommendation:** We recommend BLM reevaluate the reclamation bond, taking into account the potential need for neutralizing borrow material. The Final SEIS and ROD should support the bond estimate and update it as necessary.

In light of the uncertainty whether sufficient neutralizing waste rock is available for the Leeville project, it is unclear that the high volume of PAG waste rock disposed since 2002 has been sufficiently encapsulated/neutralized. The Leeville Mitigation Plan (Final EIS, Appendix A, p. 2) states that long-term trust funds as described in 43 CFR 3809.552(c) will be established at the time the closure plan is completed, if warranted. However, the Final EIS and Draft SEIS do not assess the potential costs of long-term monitoring and treatment or hauling of contaminated groundwater or effluent should it occur, or predict when it could occur. For example, the Draft EIS indicates that seepage from the waste rock facility seepage collection system will be hauled to Newmont's Mill 4 tailing facility. As we have stated in the past, BLM should not wait until closure to determine whether a long-term operation and maintenance plan will be needed to avoid environmental degradation in the future. Such determinations are a part of project

evaluation during project planning because they are necessary for decisions on whether and how the proposed project should go forward. If a long-term trust fund is deemed necessary, early contribution of funds is necessary to ensure adequate funds will be available in the future to cover operation and maintenance after the mine is closed. Deferring payments for many years would require a larger sum to be paid by the mine operator near or after project completion.

**Recommendation:** The Final EIS should provide a more thorough evaluation of the potential long-term operation and maintenance requirements at the Leeville mine, and describe and ensure total neutralization of all PAG waste rock, as well as containment, treatment or other proper disposal of all fluids exceeding water quality standards in perpetuity.

**Recommendation:** The Final EIS and ROD should describe the long-term operation and maintenance plan in detail and identify and justify the amount and terms of the trust fund.

#### Mercury Air Emissions

The Emigrant Project Draft EIS (p. 4-11) and Leeville Mine Draft EIS (p. 4-14) both indicate that ore processed from those mines at the South Operations Area would offset production from existing sources with no projected increases in total annual mercury emissions from the South Operations Area. It is unclear what such offsets would entail and which existing sources would be offset. Different ore bodies contain different amounts of mercury. Although mercury emissions controls at Newmont's South Operations Area capture a substantial amount of mercury at its processing facilities, emissions are a function of the mercury content of the ore. None of the earlier EIS analyses conducted for the SOAPA, Leeville, or Emigrant projects estimate the amount of mercury that could be released into the air by processing ore from the Leeville and Emigrant mines, describe how controls at the South Operations facilities will reduce mercury emissions from these ores, or discuss potential deposition impacts to watersheds. In addition, it is unclear whether the current mercury emissions at the South Operations Area, reported as 311 pounds for 2006 (Draft SEIS, Table 3-2), are expected to be similar over the remainder of the life of the Leeville project.

**Recommendation:** The Final SEIS should provide additional information regarding ore sources and existing and future projected mercury emissions and watershed deposition impacts from Emigrant, SOAPA, and Leeville ore processing at South Operations, as well as from other mines that may foreseeably be processed at Newmont's South Operations. This discussion should break down the mercury emissions projections for each mine to illustrate how emissions are, or will be, offset.

**Recommendation:** The Final SEIS should provide an updated, detailed list of all sources of mercury, the unit processes that generate mercury, and the equipment included in the system to condense, capture, and/or treat mercury and reduce mercury emissions.

The 2006 testing required for Tier 1 facilities under Nevada's Mercury Control Program has revealed that the pre-heaters at Newmont South Operations Area emit a significant amount of mercury air emissions.

**Recommendation:** The Final SEIS should identify the controls Newmont anticipates installing on these units in the second phase of Nevada's Mercury Control Program, and discuss whether a significant change in the pre-heater emissions is expected.

In the section addressing mercury emissions, the Draft SEIS discusses a recent study by EPA's contractor, ICF International (November 30, 2006). The Draft SEIS (p. 3-17) states this report concludes that "the dominant influence on air quality impacts for mercury is generally the source closest to the receptor." This is an incorrect interpretation of the report. The analysis in the report for individual states focuses on the single grid cell where sources in that state contribute the most to deposition. For instance, Figure 7-42 of the report depicts the single grid cell (blue triangle) with the maximum simulated contribution from sources within Utah. The "Contributions to Total Deposition" chart in Figure 7-42b of the report indicates that, for this grid cell, Utah sources are contributing 74.7% of total deposition. This single grid cell is not necessarily the location in the state that has the greatest overall mercury deposition or the greatest deposition from out of state sources. Therefore, it does not present a complete picture of how Nevada sources, and northern Nevada sources in particular, are affecting neighboring states.

In order to draw conclusions about the cumulative impacts of mercury in the cumulative effects study areas (CESA), the model's GIS AggreGATOR tool should be used. For any given 12-km grid cell within the United States, the tool can be used to trace mercury emissions back to the sources that were tagged for the model. For example, Gold Quarry is individually tagged in the model, as are the Barrick Gold Strike, Twin Creeks, Jerritt Canyon, Bald Mountain, and Cortez mines. In addition, the model includes a collective tag for all Nevada gold mines.

This model and tool will be updated within the next few weeks, and we will provide BLM with a copy as soon as it is available. The current version of the tool allows the user to trace emission related deposition backward from a 12-km grid to the tagged sources. The update will allow users to start with individual or combined tagged sources of interest and determine their deposition impacts. This application should, in turn, help the user delineate a reasonable CESA for mercury impacts.

**Recommendation:** The Final SEIS should describe and quantify in detail the mercury impacts in the CESA based on the modeling results, which can be accessed with the updated GIS AggreGATOR tool.

The Emigrant Mine should be included in the CESA because of its ore processing association with the South Operations Area. The CESA for air and water resources affected by mercury may

need to be expanded based on the results of the modeling. The updated model and tool, which will allow users to start with individual or combined tagged sources of interest and determine their deposition impacts, should help BLM to delineate a reasonable CESA for mercury impacts. The cluster of grid cells that are demonstrated by the model to be affected to a reasonable degree by mercury deposition in and from northern Nevada should suggest the location and extent of the CESA.

**Recommendation:** We recommend BLM reconsider the CESA associated with mercury emissions. The Final SEIS should describe how the CESA was delineated and support the decision with the model results.

### Appendices

Appendices A, B, and C are missing in the Draft SEIS and should be provided in the Final SEIS.